

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 01-143233

(43)Date of publication of application : 05.06.1989

(51)Int.Cl.

H01L 21/76
C30B 25/02
H01L 21/205
H01L 29/04
H01L 29/80

(21)Application number : 62-300950

(71)Applicant : NEC CORP

(22)Date of filing : 27.11.1987

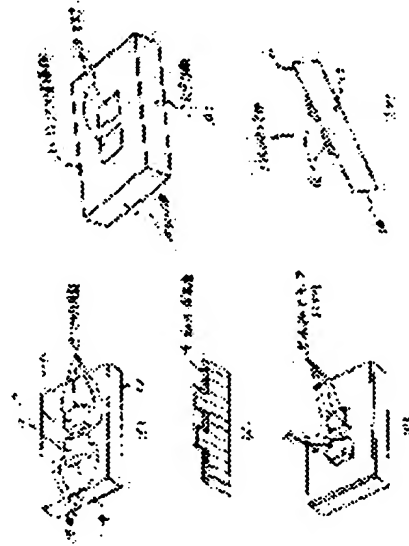
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(54) MANUFACTURE OF SEMICONDUCTOR ELEMENT

(57)Abstract:

PURPOSE: To achieve electrical isolation between elements easily by a method wherein plateau-shape structures which have required faces are exposed on the surface of a group IV crystal substrate and then a III-V compound semiconductor layer is formed by an atomic layer epitaxial growth method.

CONSTITUTION: GaCl and AsH₃ are employed as group III raw gas and group V raw gas respectively and atomic layer epitaxial growth is repeated 2000 times on a wafer at 450° C. The film thickness of a GaAs growth layer 19 obtained by slant polishing is, for instance, 7000Å on a face (211) and 4000Å on a face (110). AuGe ohmic contacts 20 are formed on four corners of the upper surface of each plateau-shape structure of the wafer. Electric conduction is recognized between the ohmic contacts formed on the same face (211) and, by a Hall measurement, the conductivity type is n-type and the carrier concentration is $1 \times 10^{16} \text{cm}^{-3}$. On the other hand, the electric conduction is not recognized between adjoining plateau-type growth layers so that the electrical isolation between elements can be achieved completely. Thus, the electrical isolation between the elements can be achieved easily without making a process complicated.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]